SKILLS FOR THE GREEN TRANSITION

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Overview

The adoption of green technologies as part of the transition to a more sustainable economy must be accompanied by the development of specific organizational capabilities and skills. Firms are required to transform both their production processes and their human resource structures in order to better adapt to this shift. However, the lack of those human skills and capabilities could lead to a bottleneck problem difficult to overcome by organizations.

From dynamic capabilities theory (Teece, 2007; Teece, Pisano & Shuen, 1997) we can affirm that a lack of dynamic capabilities can significantly hinder a firm's ability to adapt to changing market conditions, effectively implement innovation, and maintain competitiveness. Firms that lack the necessary capabilities to sense emerging trends, innovate their product offerings, or reconfigure their organizational processes may struggle to keep pace with competitors. Inadequate dynamic capabilities often result in missed opportunities, a failure to anticipate environmental shifts, and an inability to respond swiftly to disruptions in the business environment. As a consequence, firms may find themselves unable to capitalize on evolving industry standards, technological advancements, or changing consumer preferences, ultimately undermining their long-term survival and growth.

In this context, the development of dynamic capabilities is crucial for firms to remain competitive and sustainable, while the absence of these capabilities can lead to a significant strategic disadvantage. Firms must continually invest in the enhancement of their dynamic capabilities to adapt to the complexities of the modern business landscape, characterized by rapid technological changes, market volatility, and increased environmental pressures.

Our purpose in this paper is to look inside the necessities of small and medium enterprises (SME) in Europe to transit into their greener activities. Our contribution is going inside of how the lack of skills and competences that a firm faces in this process. In particular, first we try to evaluate the drivers of the lack of firm's capabilities that they face and as a second concern, we investigate how those shortage of capacities impact in the purpose of firms to be greener. Although almost firms face to similar barriers SMEs are particularly hindered by the absence of adequate skills of workforce.

Methods

To examine the obstacles that contribute to the skills shortage in the green transition, we use the Flash Eurobarometer Survey 537 'SMEs and Skills Shortages.' This survey was carried out by the European Commission between September and October 2023, comprising more than 14,000 interviews with SME managers from the 27 EU member states, plus the United Kingdom, Norway, Switzerland, and Iceland. This survey provides a representative coverage of European SME in the manufacturing, retail, services, and industrial sectors. However, its main limitation is that it is a cross-sectional dataset, which requires some caution when trying to generalise our results.

To capture the skills shortage, we use a binary variable, which takes the value of 1 if a firm reports difficulties in finding employees with the right skills, and 0 otherwise. The explanatory variables used in the model to understand skills shortages are categorized into two vectors: education level and barriers. The education level vector refers to the educational levels to recruit for, and includes secondary education, bachelor's degree, master's degree, PhD, or vocational training qualifications. The barriers vector includes eight reasons for facing skills shortages: bureaucratic barriers or complex legal requirements, lack of the right qualifications, skills, or experience among applicants, a limited number of applicants, inability to compete with offers from other employers, inability to provide long-term career prospects, insufficient internal capacity to train staff, a large number of retirements, or the location being unattractive for potential employees.

To estimate the probability of facing skills shortages, we use a discrete choice univariate probit. To minimize any estimation bias due to omitted variables, we have added a series of control variables to all equations. To account for relevant observable firm-level characteristics, we include controls for firm size, age (young firms), financial situation

(high turnover), location (rural), and the importance of external support to address skill shortages (cooperation with public employment services). Finally, we introduce sector dummies (manufacturing, retail, services, and industry) and country dummies

Results

The descriptive information shows that 60.4% of the firms state that, in general, they face difficulties in finding personnel with the appropriate skills. Regarding the skills for the green transition, 12.3% of these firms point out that they face difficulties in finding personnel with the appropriate skills to make the business more sustainable and environmentally friendly. This is a percentage greater than the corresponding to digital skills (7.4%).

The results of the empirical analysis (Table 1), comparing the firms that, in general, find difficulties (column 1) with those that find difficulties regarding to be more environmentally friendly (column 2) show, first, that these problems exist for almost all the educational levels, with all the parameters being positive and significant with the exception of PhDs. Second, the results show that this is a complex problem, and firms face many different barriers to find the employees with the appropriate skills. Specifically, regarding the skills for the green transition, from the eight reasons considered, the parameters are positive and significant in six of them: lack of the right qualifications, skills, or experience; a limited number of applicants; inability to compete with offers from other employers; insufficient internal capacity to train staff; a large number of retirements, and the location being unattractive. These reasons explaining the companies' skill shortages are also present when we consider firms in general, with the exception of the insufficient internal capacity to train staff with suggest that the green transition requires specific skills that the firms are not able to cover with their internal training activities. The estimations also show that the green skills shortages are important for all sizes of SMEs and that they happen mainly for service companies.

Table 1. Factors contributing to the skill shortage (average marginal effects)

	Skills shortage (I)		Green skills shortage (II)	
Educational levels				
Secunday educaction	0.0733***	(0.0172)	0.0175**	(0.0067)
Bachelor's degree	0.0693***	(0.0094)	0.0128*	(0.0061)
Master's degree	0.0363*	(0.0155)	0.0140*	(0.0060)
PhD	-0.0192	(0.0229)	-0.0158	(0.0165)
Vocational training qualifications	0.1113***	(0.0152)	0.0215***	(0.0062)
Barriers				
Bureaucratic barriers or complex legal requirements	-0.0293*	(0.0126)	0.0033	(0.0080)
Applicants do not have the right qualifications, skills or experience	0.1926***	(0.0088)	0.0282***	(0.0047)
There are few or no applicants	0.2343***	(0.0091)	0.0444***	(0.0044)
Inability to match other employers' offers (wage, benefits, work flexibility)	0.0442***	(0.0097)	0.0172**	(0.0054)
Inability to offer longer-term career prospects	-0.0241	(0.0128)	0.0064	(0.0068)
Insufficient internal capacity to provide training to staff	0.0236	(0.0155)	0.0219**	(0.0079)
Large number of your staff retiring	0.0622***	(0.0122)	0.0240***	(0.0067)
Your location not being attractive for potential staff	0.0468***	(0.0117)	0.0176**	(0.0058)
Observations	14,832			

Estimations control for firm-level characteristics and country dummies (Available from the authors on request; not reported here due to space limitations). *; **; *** correspond to significance levels of 1%, 5%, and 10%, respectively. Robust standard errors in parentheses. Source: compiled by authors from The Flash Eurobarometer Survey 537.

Conclusions

In this paper, we focus on the skills shortages that European SME face to transit into greener activities. To examine these shortages, we have considered two vectors: educational levels and eight potential barriers. To carry out the empirical analysis, we have used the Flash Eurobarometer Survey 537 'SMEs and Skills Shortages that provides information for more than 14.000 companies. The results of the empirical analysis show that firms face significant difficulties to find the appropriate green skills and that this is a complex problem because is affecting at almost all educational levels and it is explained by a multiplicity of reasons.

References

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